Louisville 2004: Risk Management Actions

METRO Louisville

EPA Science Forum - June 3, 2004

Jon Trout

Louisville: Spring 2003 Status

- West Jefferson County Community Task Force (WJCCTF)
- Comprised of Citizens, Industry, Academia, and Government
  - 1996 - Study issues of concern
  - Air toxics from "Rubbertown" identified as major issue
  - First step – air toxics monitoring study

WJCCTF

- Resources from EPA – CBEP, Kentucky, University of Louisville, LMAPCD
- Monitor site locations … chosen
- Air toxics to be monitored … chosen
- Risk **Assessment** Work Plan … developed
- Risk **Management** Plan … developed

West Louisville Air Toxics Study
WLATS

- 1-Year Monitoring Study

  April 2000 to April 2001

- Monitored for:
  - 83 Volatile Organic Compounds (TO-15)
  - 63 Semi-Volatile Organic Compounds
  - Formaldehyde, HCl, HF
  - 20 Metals

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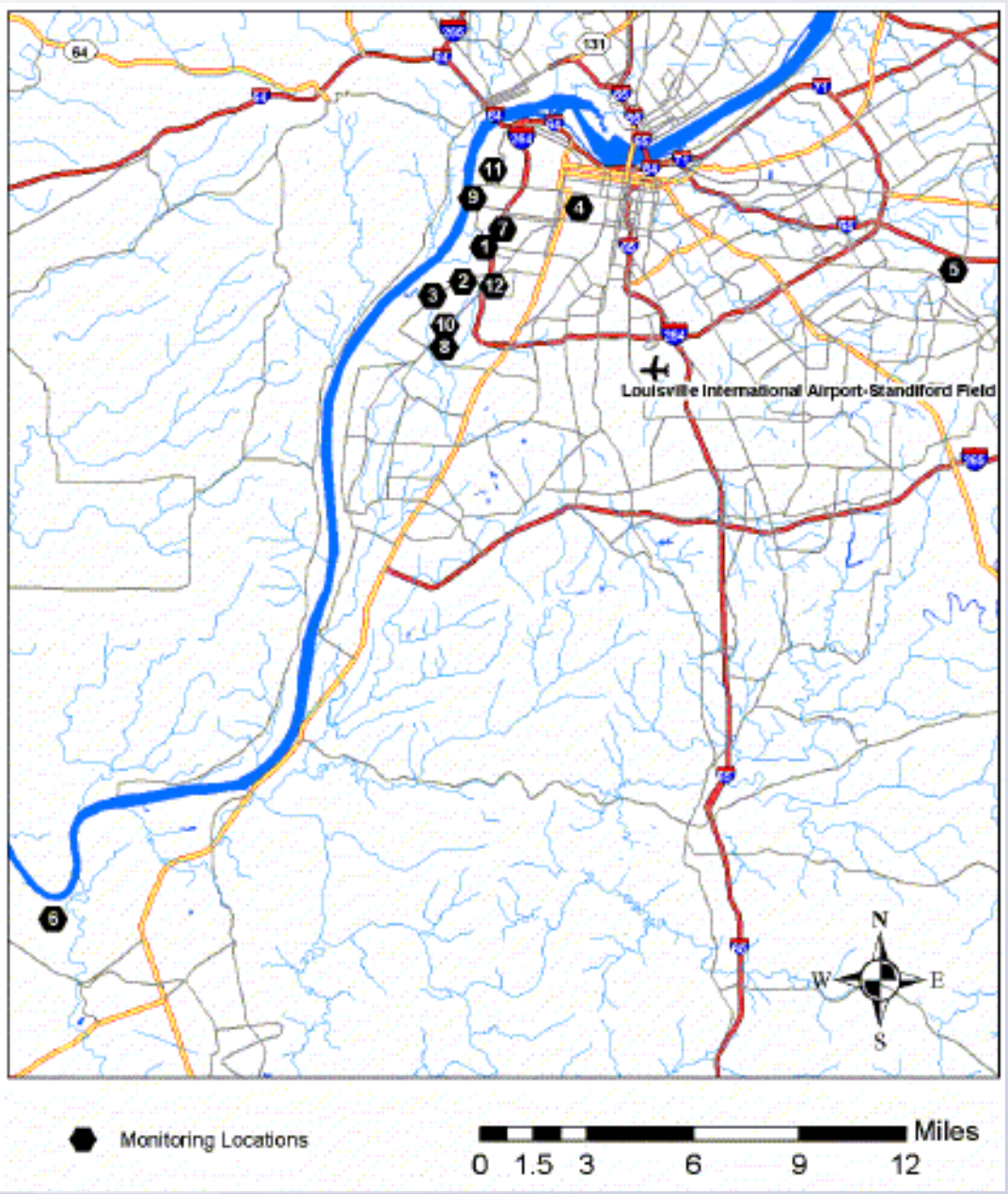
64
131
11
9
7
1
4
2
12
3
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8
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6
Louisville International Airport-Standiford Field
N
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Monitoring Locations
Miles
0 1.5 3 6 9 12

WLATS Results

- 17 carcinogens with risk greater than one in one million (10^{-6})
  - Acrylonitrile **130**
  - Arsenic compounds **11**
  - Benzene **32**
  - Bromoform **13**
  - 1,3-Butadiene **500**
  - Cadmium compounds . . . **3**
  - Carbon tetrachloride . . . **14**

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WLATS Results

- 17 carcinogens > 10^{-6} (con't)
  - Chloroform **77**
  - Chromium compounds . . . **66**
  - 1,4-Dichlorobenzene. . . . **19**
  - Ethyl acrylate **33**
  - Formaldehyde **46**
  - Methylene chloride . . . **17**
  - Nickel compounds . . . **6**

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WLATS Results

- 17 carcinogens > 10^{-6} (con't)
  - Perchloroethylene **39**
  - Trichloroethylene **16**
  - Vinyl chloride **5**

  - **Chloroprene . . H.Q. . . 13.9**

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ATSDR

- "Because of lack of sampling data (for air) ATSDR concluded that the Rubbertown industrial area poses an **indeterminate** public health hazard … ATSDR will evaluate additional data as they become available."

ATSDR 1998

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Risk Management Plan: Analysis

- Source Identification
- Option Selection
- Implementation

Risk Management Plan: Option Selection

- Public Awareness
- Education of Sources
- Education of Health Providers
- Technical Assistance
- Pollution Prevention
- Political Action
- Economic Assistance
- Public Health Initiatives
- Regulatory
- Legal Actions

1,3-Butadiene

#1 Public Awareness

- *The Courier-Journal* 2001 emissions
  - American Synthetic Rubber . . . . **70** TPY
  - Zeon Chemicals . . . . . **12** TPY
  - Rohm & Haas . . . . . **2** TPY
  - On-Road Mobile Sources . . . . . **43** TPY
    for all of Jefferson County
  - Chloroprene "oversight" in report identified
    2-Chloro-1,3-butadiene

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1,3-Butadiene

#6 Political Action

- Mayor Jerry Abramson
  - Met with three companies … **May 2003**
  - Requested voluntary reductions
  - All three companies promised voluntary actions
    - DuPont Dow Elastomers included (chloroprene)
    - Decided to make actions enforceable
  - Agreed Board Orders … Rejected by the companies
  - Board Agreements – current status …
    - Two **approved** by the Board
    - One company agreed to revise operating permit conditions
    - ASR action to study not accepted by the Board
    - **NEWS FLASH – ASR agreed to replace flare w/ "minimum 99.5% efficient combustion device"**

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American Synthetic Rubber Study

Analysis of Contribution of 1,3-Butadiene to Louisville's Ambient Air Quality

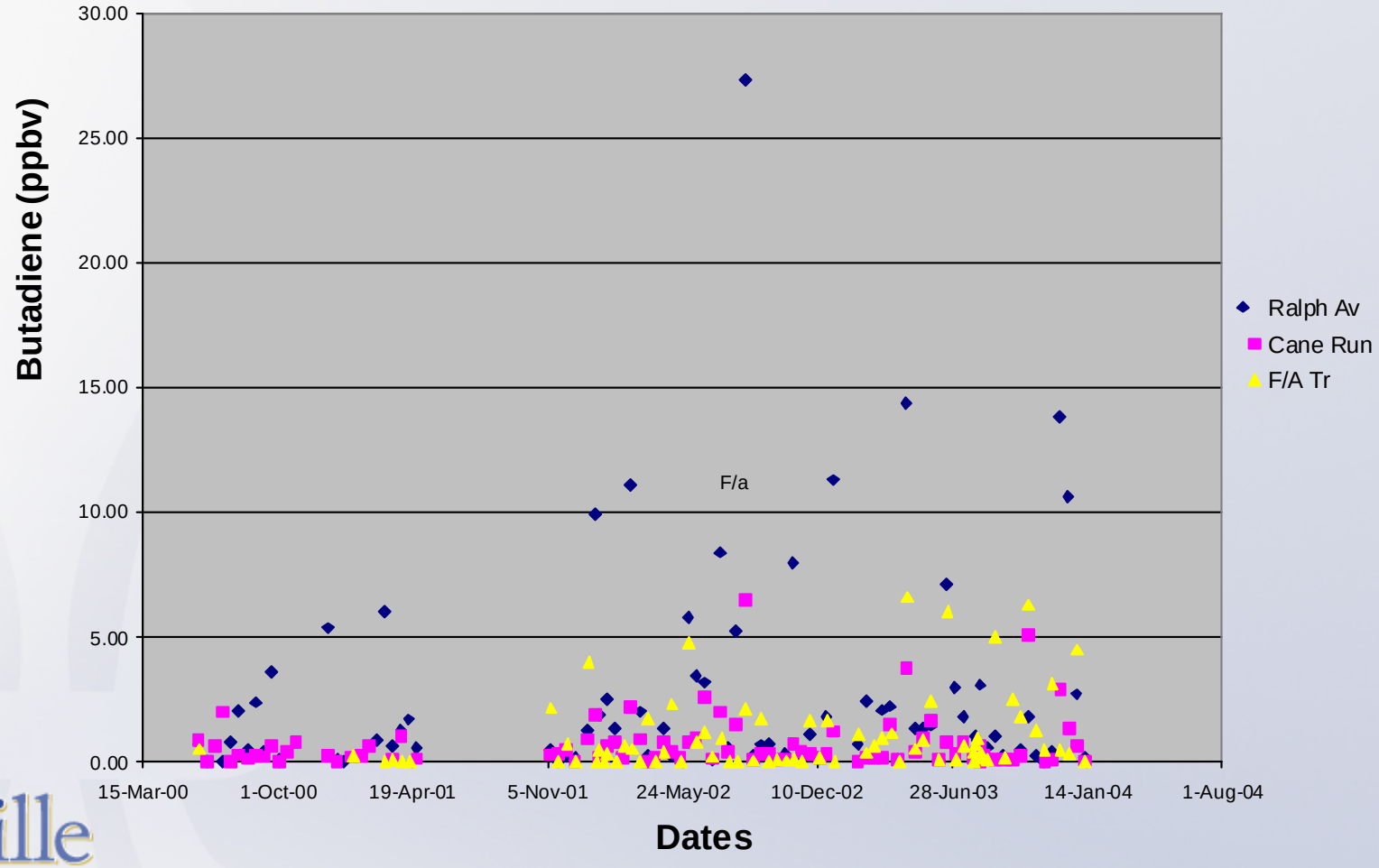
Prepared for the
Louisville Metro Air Pollution Control District
by the
Kentucky Institute for the Environment and Sustainable Development
University of Louisville
3/16/2004

ASR Study Area

Monitoring Results (ppbv)

Date	Ralph	C.R.	F/A Tr
7-14	1.80	0.84	0.62
Shutdown			
7-26	15.55	0.24	1.48
7-28	0.41	0.17	0.39
7-30	0.16	0.18	0.05
8-1	1.01	0.09	0.74
8-3	0.88	0.06	
8-5	0.44	0.41	1.00
8-7	0.76	0.10	0.28
8-9	3.10	0.65	0.32
Startup			
8-12	0.30	0.28	0.15

1,3-Butadiene Monitored Concentrations



ASR Study Conclusions

- For 1,3-butadiene:
  - Ambient concentrations 75% lower during ASR shutdown
  - Ambient concentrations higher (on average) at monitors closer to ASR
  - Ambient concentrations increased by 35% per year

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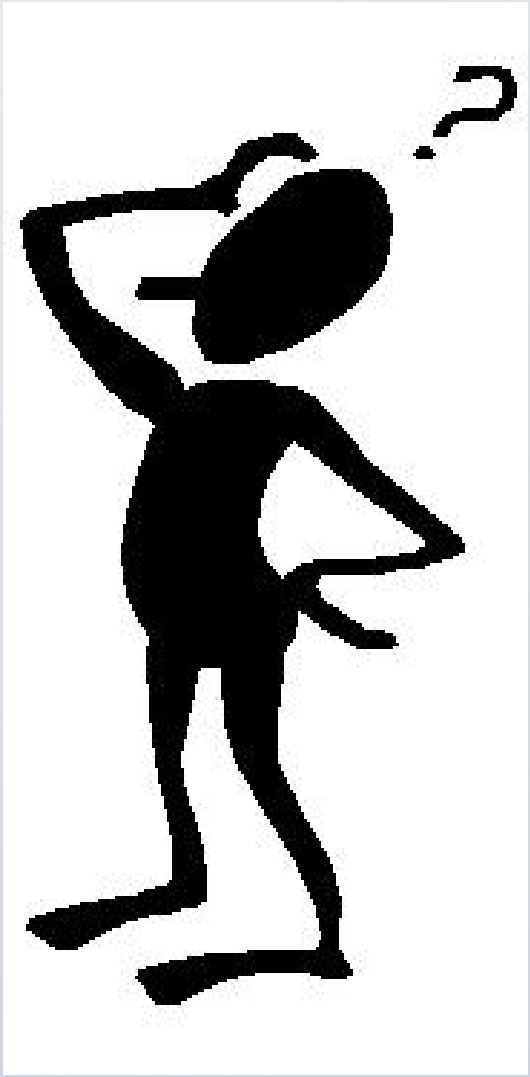
Let's be honest ...

Who is really going to be responsible for solving the TOTAL urban toxics problems?



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#9 Regulatory Response Issues

Draft regulations public in mid-June

What Compounds?

- Chemicals of concern
- 188 HAPs
- Carcinogens
- Non-carcinogens
- List
- All compounds

Regulatory Response Issues

What is Acceptable?

- Occupational health standards
- Carcinogens – Risk
  - 10^{-6} … 10^{-5} … 10^{-4}
- Non-carcinogens
  - RfC … RfD … LC_{50} … LD_{50} … NOAEL
- Technology standard
  - Technology only (T-BACT)
  - Technology then acceptable concentration

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Regulatory Response Issues

Who/How Sets Standards?

- Agency case-by-case guidelines
- Agency regulation
- Third-party lists – dynamic (EPA IRIS)
- Third-party lists – IBR in regulation
- Agency independent review/regulation
- Independent scientific review board

From Wisconsin document

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Regulatory Response Issues

What Sources are Regulated?

- Single **new/modified** process vs. All **existing** processes at individual plant
- **All** source categories vs. **specific** source categories
- **Individual** plant vs. all **Major** plants vs. **All** plants
- **Area** Sources? **Mobile** Sources?
- Include **Background** concentrations?

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Regulatory Response Issues

Consideration of Multiple Pollutants

- Only individual pollutant
- Carcinogens – accumulate risk from …
  - Similar cancers
  - All cancers
- Non-carcinogens – accumulate HQ from …
  - Similar adverse effect compounds
  - All compounds

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Regulatory Response Issues

How is Acceptability Determined?

- Modeled maximum concentration
  - Fence/property line (ambient air definition)
  - Closest neighborhood
- Roads?
- Neighboring plants? Does OSHA protect?

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St. Louis and Louisville Studies

Compound	St. Louis Mean	Louisville Mean ⟷ 95%UCL
Acetaldehyde	**11**	-- --
Arsenic cpds.	**13**	**9** **11**
1,3-Butadiene	**6**	**177** ⟷ **500**
Benzene	**11**	**19** ⟷ **32**
Carbon tet	**7**	**10** **14**
Chromium cpds.	**11**	**57** **66**
Formaldehyde	**58**	**32** **46**

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